

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Low Voltage Cable**

with type designation(s)

GAALSHIP HF 250 OS FR, GAALSHIP HF 250 ISOS FR

Issued to

ELETTROTEK KABEL S.p.A
Bagnolo in Piano RE, Italy

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.**

Type	Rated voltage (V)	Temp. class (°C)
GAALSHIP HF 250 OS FR	250	90
GAALSHIP HF 250 ISOS FR	250	90

Issued at **Høvik** on **2020-11-27**This Certificate is valid until **2025-11-26**.for **DNV GL**DNV GL local station: **Italy/Malta CMC**Approval Engineer: **Georgy Abramenko****Marta Alonso Pontes**
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

Type: GAALSHIP HF 250 OS FR, GAALSHIP HF 250 ISOS FR

Construction:

Conductors:	Plain or tinned annealed flexible copper, class 2
Screen:	Mica tape on the conductor
Core insulation:	XLPE
Individual screen (ISOS cables):	Pet tape, drain wire, laminated aluminium bonded to polyester tape
Collective screen:	Pet tape, drain wire, laminated aluminium bonded to polyester tape
Separator:	Mylar tape between cores and sheath
Outer sheath:	SHF1

Number of paired cores	Conductor cross-section
1 2 4 7 10 14 19 24 30 37	0,75 1 1,5

Application/Limitation

General power and lighting. Halogen free. Low smoke.

This cable is fire resistant according to IEC 60331.

The requirements of SOLAS Amendments Chapter II-1, Part D, Reg. 45, 5.2 (provision to be taken to limit Fire Propagation along Bunches of Cables or Wires) are fulfilled without any additional measures.

Type Approval documentation

Tests carried out

Standard	Issued	General description	Limitation
IEC 60092-350	2020-01	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-376	2017-05	Cables for control and instrumentation circuits 150/250 V (300 V)	
IEC 60754-1	2011-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	Low Halogen: <0,5% Halogen
IEC 60754-2	2011-11	Test on gases evolved during combustion of materials from cables - Part 2: Determination of acidity (by pH measurement) and conductivity	Halogen free: pH > 4,3 Conductivity < 10µS/mm
IEC 61034-1/2	2013-06	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%
IEC 60331-1/2	2018-03	Fire resistance / Circuit integrity – Test for method for fire with shock at temperature of at least 830°C for cables rated up to and including 0,6/1 kV	Minimum 120 min+15 min cooling down time
IEC 60332-1-2	2015-07	Tests on electric cables under fire conditions. Test for vertical flame propagation for a single insulated wire or cable.	

Job Id: **262.1-034830-1**
Certificate No: **TAE0000470**

Standard	Issued	General description	Limitation
IEC 60332-3-22	2018-07	Tests on electric and optical fibre cables under fire conditions – Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A	Charred portion of sample does not exceed 2,5m above bottom edge of burner.

Marking of product

ELETTROTEK KABEL GAALSHIP® - cable type - nominal cross section - voltage - item code n° - IEC 60092-376 - IEC 60332-3-22 - IEC 60331 - production plant* - batch no - production date - meter marking

*- A47 – DNV-GL ID 10675124

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE